

Music-Evoked Nostalgia and Charitable Giving: A Cross-Cultural Study in the United States and Mexico

Eun Cho^{1, 2}, Mario Duarte-García³, Jorge Rodrigo Sigal Sefchovich³, and Paulo C. Chagas¹

¹Experimental Acoustics Research Studio, University of California

²Child Study Center, Yale University

³ENES Morelia, The National Autonomous University of Mexico

Nostalgia, a past-oriented emotion characterized by complex affective responses, is a pervasive and fundamental human experience. Prior research has demonstrated that nostalgia serves various socioemotional functions, such as promoting a sense of belonging, enhancing one's perception of meaning in life, and boosting self-esteem. These positive emotions, in turn, can prompt individuals to engage in other-oriented behaviors, such as charitable giving. Building on this view, this study examined the impact of listening to nostalgic music on donation decisions. Undergraduate students in the United States ($n = 83$) and Mexico ($n = 97$) voluntarily participated in an online, one-on-one, experiment in which they listened to a series of self-selected nostalgic musical pieces and participated in a donation dictator game. Results indicated a significant relationship between music-evoked nostalgia and the amount of subsequent donations. Moreover, the study also found that individual differences in empathy, agreeableness (one of the Big Five personality traits), and perceived financial well-being also influenced the participants' donation decisions. Notably, the effects of these factors showed slight variations across the U.S. and Mexican samples, suggesting the role of culture in individual donation decisions.

Keywords: nostalgia, music, empathy, donation, cross-cultural

Hearing music from the past often transports us back in time, triggering an array of memories of events, people, places, and time periods in our lives. It also evokes intense and complex emotions associated with the recalled memories (Juslin & Västfjäll, 2008). This unique emotional experience is generally known as music-evoked nostalgia. While music has long been present as a powerful means to induce nostalgia, previous studies have highlighted nostalgia as one of the most common and subjectively important sources of emotion in music (e.g., Juslin et al., 2008; Sedikides et al., 2021).

Typically understood as “a sentimental longing for one’s valued past” (Reid et al., 2015, p. 157), nostalgia is considered a complex emotion comprising a blend of “past-oriented cognition and a mixed-affective signature” (Hepper et al., 2012, p. 144). Nostalgia is a self-relevant emotion, as the self is invariably centered in the memories; yet it is also a social emotion due to the autobiographical memories that often feature the self in social contexts (Batcho, 2007; Sedikides et al., 2008). Although nostalgia is generally seen as bitter-sweet, involving sentimental longing and wistful affection for the past, a wave of nostalgia research has viewed it to be a positively valenced emotion (e.g., Wildschut et al., 2006). Nostalgia is closely linked to increased perceptions of social connectedness (Zhou et al., 2008) and thus often helps counteract negative emotions such as loneliness

and sadness, while boosting optimism for the future (Cheung et al., 2013). Consistent with this view, a recent study showed that nostalgia evoked by music induced positive emotions and enhanced a sense of security and emotional proximity, even in challenging and anxious situations like the COVID-19 pandemic (Gibbs & Egermann, 2021).

Due to its nature and ability to evoke rich and positive emotions, nostalgia has long been viewed as an effective means of persuasion and is frequently employed in advertising and marketing. When people reflect on things (e.g., objects, experiences, people) associated with their past, they often view these memories through “rose-tinted glasses” (Davis, 1979), which bolster a sense of warmth, affection, and gratitude (Sedikides et al., 2008). It follows that nostalgia evoked by advertising likely results in favorable attitudes toward the advertised brand or product (Pascal et al., 2002) and ultimately exerts an influence on consumer purchase intent and behavior (Kusumi et al., 2010). Many studies have shown evidence that nostalgia effectively creates a sense of comfort and emotional attachment to a brand or product, promoting consumers’ loyalty (e.g., Pascal et al., 2002; Rana et al., 2021; Reisenwitz et al., 2004; Schindler & Holbrook, 2003; Sellick, 2004).

Another area in which the persuasion effect of nostalgia is well-established is charitable giving. When people indulge in reminiscence, they often revisit memories involving past interactions with close others, such as friends, family members, and romantic partners. By reigniting such meaningful relationships, they are likely to experience a renewed sense of social connectedness and secure attachment (Sedikides et al., 2008) and find meaning in life (Routledge et al., 2011), which may, in turn, provide the foundation for a willingness to help others (Mikulincer et al., 2005). Such effects of nostalgia to facilitate donation and other helping behaviors were reported in a few experimental studies. For instance, in a study with older adults, Ford and Merchant (2010) raised a donation campaign for a Public Broadcasting Service (Studies 1 and 3) and University Alumni Association (Study 2) with two

Eun Cho  <https://orcid.org/0000-0002-5751-9925>

The work was supported by UC MEXUS-CONACYT Collaborative Grants (CN-18-120). We are grateful for their financial support.

Correspondence concerning this article should be addressed to Eun Cho, Experimental Acoustics Research Studio, University of California, 1935 Chicago Avenue, Unit B, Riverside, CA 92507, United States. Email: eun.cho@yale.edu

advertisements—one with nostalgic appeal and another without nostalgic cues. The nostalgic advertisement led to significantly stronger emotional reactions and increased donation intentions. Similarly, Zhou et al. (2012) demonstrated that college students, when prompted to induce nostalgia through recollecting personal memories, displayed higher charitable intentions and a greater propensity for helping behaviors, compared to those in the control condition, who were instructed to reflect on an ordinary event from their daily lives.

Yet, undoubtedly, the relationship between nostalgia and charitable giving is closely interwoven with various individual differences. The abovementioned studies reported that in addition to nostalgia, other factors, such as attachment security and empathy (Juhl et al., 2020; Zhou et al., 2012) and one's proneness to nostalgia (Ford & Merchant, 2010) moderated the effect of nostalgia on participants' donation and other helping behavior. In addition, there is another important factor to consider when it comes to charitable giving—cultural background. People's intentions to donate have been extensively studied in various cultural contexts and the role of culture often has been highlighted (e.g., Miller & Bersoff, 1998; Y. Wang et al., 2015). While helping others is valued in most cultures, the ways in which people approach giving, the causes they prioritize, and the methods they use to support others can vary widely across cultures (Einolf, 2017). This is largely due to the influence of cultural experiences, such as values and beliefs, social norms and expectations (Kashif et al., 2015; Siemens et al., 2020), religious beliefs (Forbes & Zampelli, 2013; Grönlund & Pessi, 2015), and political affiliation (Alzuabi et al., 2022), all of which can play a role in shaping people's decisions regarding charitable giving.

Overview of Current Research

The idea of a close link between nostalgia and prosocial behavior is not new; however, to our knowledge, the impact of music-evoked nostalgia on charitable giving has not been empirically tested. Given that music is one of the most powerful and effective means of inducing nostalgia (Janata et al., 2007; Juslin & Västfjäll, 2008), it is highly plausible that nostalgia evoked by music can lead to a strong willingness to donate. To explore this possibility, we artificially induced nostalgia using self-selected music playlists in samples of college students in the United States and Mexico, and examined if the participants' nostalgic responses were related to their subsequent decisions regarding charitable giving. We paid particular attention to the amount of their donations, anticipating a positive correlation between the intensity of the participants' self-reported nostalgia and the subsequent donation amounts.

Additionally, we also sought to explore potential variations in the relationship between nostalgia and charitable giving within the U.S. and Mexican samples. Given that cultural values and norms are closely linked to individuals' donation behavior across different cultures (e.g., Y. Wang et al., 2015), this study was well positioned to explore the role of culture, as data collection was conducted among college students in both countries using an identical experimental paradigm. As a secondary objective, we aimed to examine the similarities and differences in how students from the United States and Mexico decide on charitable giving after being exposed to nostalgic music. While the motivation to give is shaped by a complex interplay of various personal and contextual factors (see Bekkers & Wiepking, 2011), we attempted to address two specific questions: (a) Are there differences in the donation amount between the two samples? and (b) which factors are associated with their donation decision?

Given the intricate nature of the decision-making process underlying charitable donations, it was necessary to take various factors into account when examining the association between music-evoked nostalgia and charitable giving. Through a comprehensive review of previous research on human donation behavior, we identified a range of person-level and context-level factors that could potentially mediate a participant's donation amount. Figure 1 illustrates our proposed model, which outlines these factors and their potential impact on a participant's donation decision within a specific context in which music was employed as a tool to manipulate emotional experience.

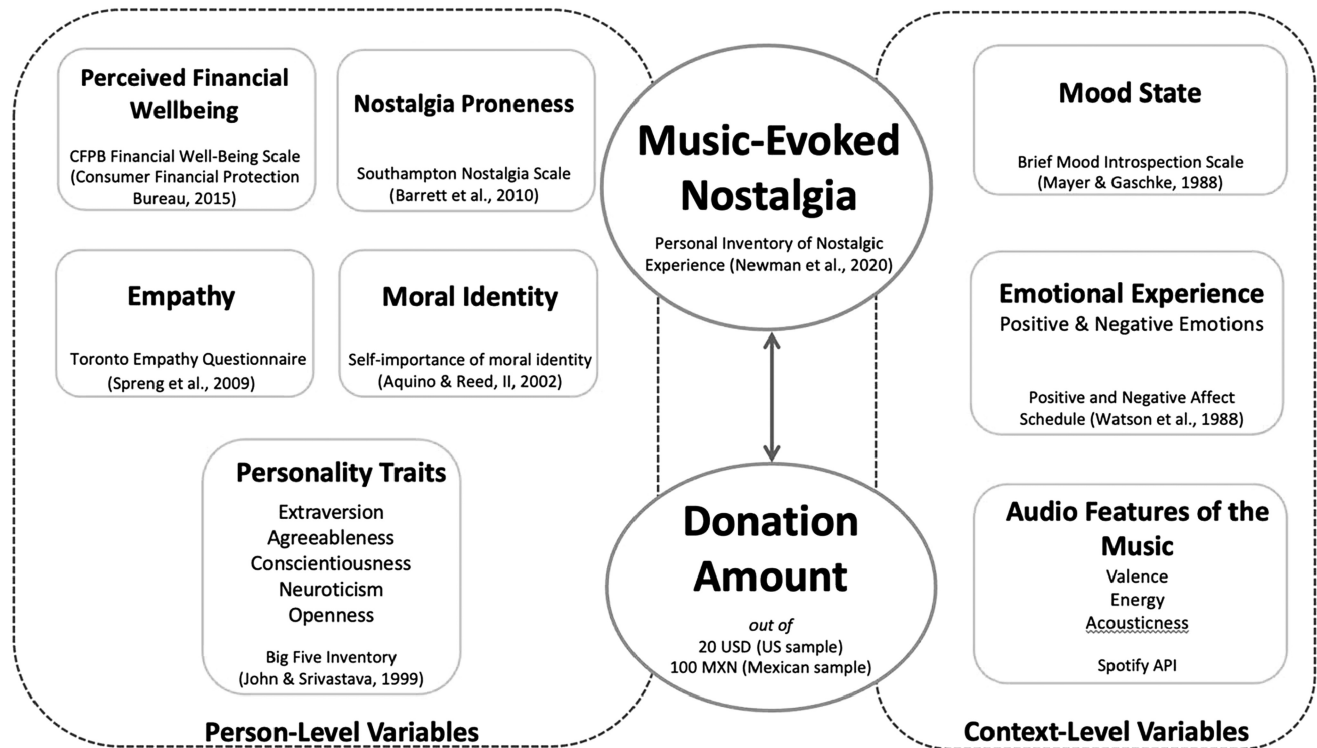
Regarding person-level variables, we accounted for empathy, given its close association with altruism and various forms of helping behavior (Juhl et al., 2020; Lay & Hoppmann, 2015; Liu et al., 2018; Verhaert & Van den Poel, 2011). Additionally, we considered moral identity (MI)—the degree to which an individual perceives themselves as a moral and ethical person and is committed to upholding moral principles and values (Aquino & Reed, 2002). Previous studies have indicated that individuals who endorse strong moral principles tend to be more inclined to give to others (Schervish & Havens, 2002; Wilhelm & Bekkers, 2010; Winterich et al., 2009). Nostalgia proneness was also included, supported by Ford and Merchant's (2010) study, which demonstrated that individuals more prone to nostalgia displayed heightened donation intentions when exposed to personally meaningful nostalgic appeals. We also considered the Big Five personality traits, given the extensive body of literature linking these traits, particularly agreeableness and neuroticism, to donation behavior (e.g., Hill, 2016; Pinazo et al., 2016). Finally, we included an individual's perceived financial well-being, drawing from research indicating an association between financial capital and charitable giving (L. Wang & Graddy, 2008).

In addition to these person-level factors, we also took into consideration various context-level factors associated with the moment participants listened to nostalgic music. Given that previous literature has highlighted the significance of emotional reactions as a critical element in the motivation for helping and altruistic behaviors (Dickert et al., 2011) and that nostalgic music is known to evoke intense emotions (Juslin & Västfjäll, 2008), we included participants' self-reported emotional experiences (both positive and negative affect) during music listening as contextual factors. Furthermore, we considered participants' overall mood state upon their arrival at the experiment, as mood often interacts with cognitive processing (LeBlanc et al., 2015) and may consequently impact decisions related to charitable giving.

Additionally, we examined the potential impact of the audio features of the music playlist that each participant listened to, considering the possibility that the music itself, apart from its role in evoking nostalgia, could independently affect cognitive and emotional processing. To investigate this, we utilized the Spotify application programming interface (API) via Spotilyze (www.spotilyze.com) to obtain computed audio features for all of the playlists utilized in the study. The Spotify API offers quantified calculation for a broad spectrum of both basic and compound acoustic features, such as valence, energy, loudness, acousticness, liveness, and danceability. It is worth noting that Spotify's algorithms for computing these acoustic features are proprietary and are publicly not disclosed (Duman et al., 2022). Nonetheless, while the use of the Spotify API in music and sound research has gained prominence in recent years (e.g., Duman et al., 2022; Heggli et al., 2021; Vidas et al., 2021), several features, including valence, energy, and acousticness, demonstrated consistency with emotion classifications previously proposed in the music emotion

Figure 1

A Proposed Model Which Outlines the Person-Level and Context-Level Factors That May Contribute to the Listener's Decision on the Monetary Donation to a Charity



recognition literature (Panda et al., 2021) and correlated with analyses based on album cover art color schemes (Sherga et al., 2021). In this study, we specifically incorporated three specific audio features that exhibited consistency with other sound analysis approaches (Panda et al., 2021; Sherga et al., 2021). As described by Spotify, valence represents the extent of musical positiveness conveyed by a track, with values ranging from 0.0 (e.g., sad, depressed) to 1.0 (e.g., happy, cheerful). Energy is described as a perceptual measure of intensity and activity level, with a range from 0.0 (e.g., relaxing) to 1.0 (e.g., energetic). Lastly, acousticness offers a measure of confidence in whether a track is acoustic, with a value of 1.0 indicating a high level of confidence.

Finally, we examined the relationship between the intensity of nostalgia and the participant's subsequent donation amount while controlling for the potential effects of all the person-level and context-level variables considered.

Study 1: The U.S. Sample

Method

This study was approved by the Institutional Review Board of the University of California, Riverside. Originally, the study was designed as an in-person, one-on-one experiment that required participants to visit the research lab. However, due to the COVID-19 pandemic that emerged during the early stage of data collection, conducting the in-person experiment became unfeasible. As a result, we reconfigured the experiment to be conducted virtually. While we made every effort to replicate the in-person experiment in the online

version, the two versions inevitably offered different experiences to the participants. Therefore, we only included data from the virtual experiments in this article. Data collection was conducted between July 2020 and January 2021, a period when the COVID-19 pandemic had significantly impacted people's everyday lives across the world, including the United States and Mexico.

Participants and Recruitment

The target population consisted of undergraduate students, aged between 18 and 25 years, who were enrolled in a large public university on the West Coast of the United States. This university is known for its diverse student body, with approximately 41.8% of the entire student population identifying as Chicano/Latino and 34% as Asian. Furthermore, 55.9% of the student body comprises first-generation college students whose parents have not completed a 4-year degree (UC Riverside Institutional Research, 2020).

Participants were recruited through various online channels on the campus, including email lists from undergraduate advisors and faculty and online campus bulletins. The recruitment invitation included a brief description of the study, along with a weblink to an initial online survey. A total of 85 students completed the online experiment; however, two participants who had spent their formative years outside of the United States were subsequently excluded. This exclusion criterion ensured that the final sample consisted of individuals who had grown up in the United States, resulting in a final sample size of 83 participants.

The sample was predominantly between 18 and 22 years of age ($M = 20.07$, $SD = 1.50$), and more than half were female (71.1%).

In terms of the racial/ethnic background, approximately 40% of the sample self-identified as Hispanic or Latino, 25.3% as Asian American, 14.5% as Caucasian/White, and 9.6% as African American/Black. While participants from the Arts and Humanities disciplines were overrepresented in the sample, fewer than 20% of them were music majors.

Procedure

Participation in the experiment involved two separate phases: (a) an online initial survey and (b) a one-on-one music-listening experiment over Zoom.

Initial Survey. Students who were interested in the study completed the online survey, which was enclosed in the invitation for the study participation. The online survey consisted of three parts. The first part centered on demographic data, including age, sex, ethnicity, study major, and the name of the country in which participants spent their childhood and teenage years. The second part comprised two measurements, the Consumer Financial Protection Bureau (CFPB) Financial Well-Being Scale (Consumer Financial Protection Bureau, 2015) to assess the individual's perceived financial well-being and the Southampton Nostalgia Scale, a scale to measure an individual's nostalgic tendencies (Barrett et al., 2010). Finally, participants were asked to report five pieces of music likely to bring back valued memories of their past, particularly from their middle and high school years.

Music-Listening Experiment. Upon completion of the initial survey, we scheduled a one-on-one online session for the music-listening experiment, which was conducted via Zoom. In preparation for this session, participants received explicit instructions to find a calm and quiet environment to participate in the session. We specifically advised them to keep their phones out of reach and minimize potential disruptions to ensure focused music-listening experience. Additionally, participants were given the option to use their preferred listening device, such as headphones or specific speakers, and were advised to have it ready ahead of the scheduled session. The session consisted of four distinct phases and the entire procedure took approximately 1 hr to complete (see Figure 2 for the experiment structure).

Phase 1: Questionnaires. Upon arrival to the Zoom meeting, participants were greeted with a welcome message displayed on the screen and presented with a link to access a set of questionnaires.

These questionnaires included four measurements: (a) The Brief Mood Introspection Scale (Mayer & Gaschke, 1988) to capture participants' mood states at the very moment; (b) Big Five Inventory (John & Srivastava, 1999) to measure their Big Five personality traits, including extraversion, agreeableness, conscientiousness, neuroticism, and openness; (c) Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009) to measure participants' dispositional empathy; and (d) The Self-Importance of MI scale (Aquino & Reed, 2002) to assess the extent to which they considered moral traits to be an important part of their self-concept.

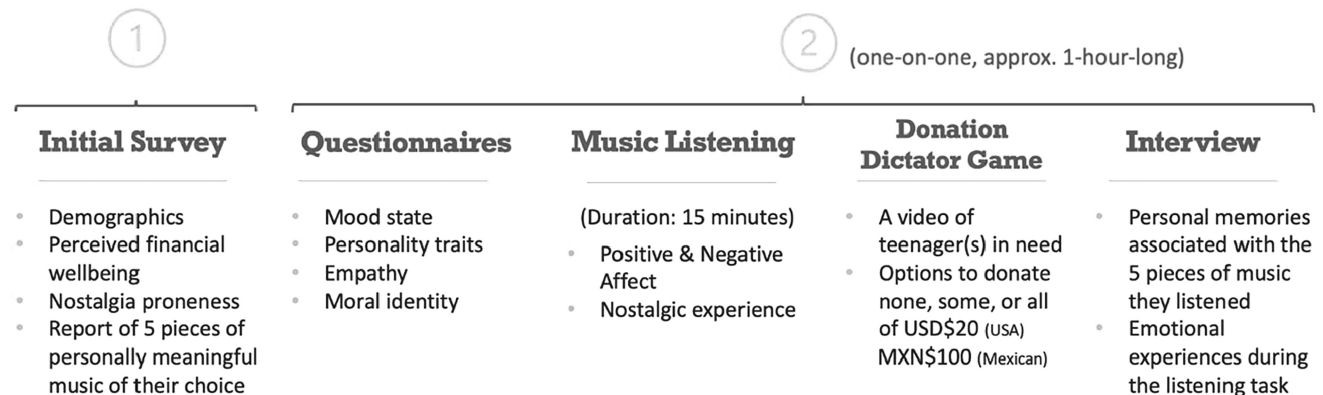
Phase 2: Music Listening. Following the completion of the questionnaire, participants were warmly greeted by the experimenter and provided with a brief overview of the study. Participants were then given the opportunity to listen to a personalized playlist featuring the five pieces of music that they had previously identified as nostalgic music in the initial survey. The experimenter created these playlists for each participant in advance. To facilitate the music listening, the sound-sharing function on Zoom was utilized. The duration for music listening spanned 15 min. Participants were instructed to begin the second questionnaire at a designated point during the music-listening session, which was signaled by a soft beep sound. The experimenter offered the following guidance:

Now you will listen to some of the songs from your song list. While listening to them, I'd like you to take a time travel to your past. Try to bring back memories of your past, especially the times when you enjoyed listening to and singing those songs. Draw pictures in your mind—what you did, what happened, who you were with, what you thought, what you felt, all sort of things... Make yourself comfortable and try to immerse yourself deeper in the music.

For an immersive listening experience, the camera and microphone on Zoom were turned off on both ends. After 12 min of music listening, participants were gently prompted with a beep sound and provided with a link to access the questionnaire via the chat. This questionnaire aimed to capture their emotional states during the music-listening session. The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), featuring 20 words that describe various positive and negative feelings and emotions, was used to assess their positive and negative emotional states. Additionally, the Personal Inventory of Nostalgia Experience (PINE; Newman et al., 2020) was employed to measure the intensity of nostalgia they experienced while

Figure 2

The Structure of the Experiment



listening to nostalgic music. This measure involved participants rating their subjective responses to four items concerning nostalgia (e.g., “How nostalgic do you feel?,” “To what extent do you feel sentimental for the past?”) on a 1–7 scale (Newman et al., 2020).

Phase 3: Donation Dictator Game. Following the music-listening phase, both the participant and experimenter turned on their cameras for the next phase. Participants were then invited to participate in the donation dictator game, a specific variant of the dictator game (see Cartwright & Thompson, 2023 for details). This experimental paradigm, widely employed in the fields of social psychology and economics, serves as a lens to explore human altruistic tendencies and self-interest (Bekkers, 2007; Eckel & Grossman, 1996; Lehrer & Porter, 2018).

The experimenter first presented a US\$20 incentive as a token of appreciation for their participation in the study, which would be delivered in the form of an electronic gift card within 24 hr. The participant then received a hyperlink to an anonymous Qualtrics page and was asked to follow the instructions provided. At this point, both parties turned off their cameras and microphones to facilitate the task. Upon accessing the link, participants were directed to view a video about a homeless girl living in a nearby large city, within a shelter run by a nonprofit organization. The video was about 5 min in duration and portrayed the girl and her family’s typical day, but without particularly strong emotional components. Following the video, an image of US\$20 (comprising two \$5 bills and 10 \$1 bills) appeared on the screen, representing the incentive promised to them. Participants were then invited to consider making a donation to the organization featured in the video using the \$20 provided. While participants had the option to donate none, some, or all of the money they received, it was explicitly emphasized on the screen that their donation would remain completely anonymous. Participants were then invited to allocate the bills between themselves and the charity by dragging each bill image into one of the two boxes (see Figure 3).

Following this phase, both the participant and experimenter turned on their cameras for the last phase of the experiment—an in-depth interview focused on the participant’s personal memories associated with the music they had listened to, which is not within the scope of the current article.

Results and Discussion

Music-Evoked Nostalgia

Statistical analyses were performed using the SPSS Statistics 28 package. Table 1 provides an overview of the descriptive statistics for the variables included in the analyses. In the U.S. sample, the mean rating for the intensity of music-evoked nostalgia, as measured by PINE, was 5.59 ($SD = 1.10$). Notably, this rating is higher than the ratings reported in the original study that developed this measure (Newman et al., 2020) among U.S. undergraduate student samples. In the original study, participants were instructed to reflect on their life in general (Study 2: $n = 596$; $M = 4.23$, $SD = 1.49$) and to reflect on their day before going to bed in the course of 14 days (Study 3; $n = 232$; $M = 2.69$). Additionally, another study conducted at the onset of the COVID-19 pandemic with 458 U.S. adult participants reported a mean rating of 4.82 ($SD = 1.39$; J. Wang & Xia, 2021). However, it should be noted that these previous studies were survey-based studies, wherein participants completed the PINE scale during their daily

lives. In contrast, our study employed an experimental manipulation to induce nostalgia and prompted participants to report on their nostalgic experiences in real-time, which may account for the variations in nostalgia ratings observed.

Predictors of Donation Amount













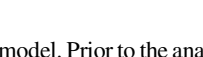
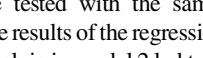
The U.S. participants donated, on average, US\$10.54 ($SD = 8.00$) out of US\$20, which accounted for 52.7% of the endowment they received. A series of statistical analyses were then conducted to explore predictors of the participants’ donation amount. First, we ran a simple linear regression to determine the effect of nostalgia intensity alone on the donation amount. This analysis accounted for 16% of the variance in the donation amount, $F(1, 81) = 16.65$, $p < .001$.

Following this, we examined whether this relationship still existed after controlling for various person-level and context-level variables proposed in Figure 1. Correlations among the person-level and context-level variables are presented in Table 2. To obtain a reduced set of independent variables, we used a backward elimination regression, which eliminated unnecessary predictors to enhance predictive accuracy (Neter et al., 1996). Person-level (i.e., nostalgia proneness, empathy, MI, Big Five personality traits, and perceived financial well-being) and context-level (i.e., mood at the time of the experiment, positive/negative affect while listening to music) variables proposed in Figure 1 were entered into the model. Prior to analysis, assumptions for multiple regression were tested. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin–Watson statistic of 1.758. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. No evidence of multicollinearity was found, as the Variance inflation factors for all variables were found to be less than 3. No studentized deleted residuals greater than ± 3 standard deviations, no leverage values greater than 0.2, and no values for Cook’s distance above 1 were found. The assumption of normality was met, as assessed by Q–Q plot. Regression results showed that perceived financial well-being (measured by CFPB) and empathy (measured by TEQ) significantly predicted participants’ donation amount and this model explained 14.4% of variance in the donation amount, $p < .001$.

Additionally, we performed a multiple regression to explore the possibility that acoustic features of the music each participant listened to, rather than music-evoked nostalgia, independently affect participants’ reactions to the music. We retrieved three audio features of the music playlists, valence, energy, and acousticness, that each participant listened to using the Spotify API. We regressed these features on participants’ ratings on nostalgia (measured by PINE) and their emotional responses to the music (measured by PANAS) separately; however, no significant relationships were found. A multiple regression was also run to understand the effect of each of the audio features on participants’ donation amount, but they did not significantly predict the donation amount.

Finally, we performed a hierarchical multiple regression to determine whether music-evoked nostalgia predicted the donation amount after controlling for the effect of other person-level and context-level variables. Two variables shown to have significant bivariate relationships with the donation amount, empathy, and perceived financial well-being, were entered as covariates in the first model, and music-evoked nostalgia measured by PINE was

Figure 3
Online Donation Dictator Game

Items	I'm donating:
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	I'm keeping:

entered in the subsequent model. Prior to the analysis, assumptions for multiple regression were tested with the same method described above. Table 3 presents the results of the regression analysis. The addition of music-evoked nostalgia in model 2 led to a significant increase in R^2 of .085, accounting for 22.9% of the variance in the donation amount, $F(2, 80) = 9.11, p < .001$. The results suggested that participants who experienced stronger nostalgia while listening to nostalgic music of their choice were likely to donate more than those who felt less nostalgic, even after controlling for the effects of other person-level and context-level variables. However, given that empathy and perceived financial well-being remained significant predictors for the donation amount in the second model, it becomes evident that these individual differences also play a crucial role in participants' donation decision.

Study 2: The Mexican Sample

Method

Participants and Recruitment

A total of 99 undergraduate students were recruited from four different universities in a city located in the Central region of Mexico.

Consistent with Study 1, we included 97 participants who spent their childhood and teenage years in Mexico as a final sample. Recruitment efforts were widespread and included various online channels, such as email invitations from undergraduate advisors and faculty, online campus bulletins, and student groups on social media. Participants' age ranged from 18 to 25 years ($M = 21.81, SD = 1.92$) and approximately half of them were females (54.6%). While participants had varying majors (i.e., Arts, Humanities, Sciences, Business), around 40% reported being music majors.

Procedure

To ensure linguistic consistency, all materials were translated into Spanish by the second author and reviewed by the fourth author for accuracy and coherence before initiating data collection. Spanish-speaking experimenters led the experiments with close supervision by the first and second authors to ensure methodological consistency with Study 1.

Despite our effort to maintain consistency in the experiment design between Study 1 and Study 2, some variations inevitable occurred. Firstly, due to funding availability, the compensation amount given to Mexican participants for the donation dictator game was MXN\$100, roughly equivalent to 25% of the incentive

Table 1
Descriptive Statistics for All Variables (U.S. Sample)

Variable	<i>M</i>	<i>SD</i>	Min	Max
Donation amount (in USD)	10.54	8.00	0	20
Music-evoked nostalgia (PINE)	5.59	1.10	1.75	7
Perceived financial wellbeing (CFPB)	22.48	6.06	4	35
Nostalgia proneness (SNS)	4.87	1.26	1	7
Mood (BMIS)	34.00	4.84	17	44
Extraversion (BFI)	3.51	0.65	1.38	4.75
Agreeableness (BFI)	4.17	0.58	1.89	5.11
Conscientiousness (BFI)	3.51	0.65	2.33	4.89
Neuroticism (BFI)	3.38	0.73	1.25	4.86
Openness (BFI)	3.97	0.44	2.20	4.90
Empathy (TEQ)	53.29	5.85	32	64
MI	39.39	5.24	18	49
Positive affect (PANAS)	32.8	9.13	13	49
Negative affect (PANAS)	14.11	4.66	10	37

Note. PINE = Personal Inventory of Nostalgia Experience; CFPB = Consumer Financial Protection Bureau; SNS = Southampton Nostalgia Scale; BMIS = Brief Mood Introspection Scale; BFI = Big Five Inventory; TEQ = Toronto Empathy Questionnaire; MI = Moral identity; PANAS = Positive and Negative Affect Schedule.

provided to U.S. participants. It is noteworthy, however, that the perceived value of these monetary compensation differences may have varied, given the considerably lower price index in Mexico compared to that of the United States (Argente et al., 2020). Secondly, the video used for the donation dictator game in the Mexican sample differed from the one employed in Study 1. Our criteria for video selection were aimed at identifying an existing local organization that served children and/or teenagers that participants could better relate to through the autobiographical memories evoked by music listening (Note that we asked participants to provide five pieces of music from their middle and high school years). The selected video for the Mexican sample was approximately 3 min in duration and showcased the efforts of a local nonprofit organization dedicated to promoting education for children and youth who lacked adequate access to educational opportunities. The video portrayed various

activities in which children in the organization were engaged, highlighting the positive impact of the organization's support in the lives of these children. Although this video was more informative and less emotionally charged, compared to the one used in Study 1, both recipient organizations shared commonalities, including their geographical proximity to the participants, the population they served (i.e., children and youth experiencing financial hardship), and their established reliability (i.e., local nonprofit organizations with several decades of history within the communities).

Results and Discussion

Music-Evoked Nostalgia and the Donation Amount

Descriptive analyses of the variables used in the analyses are presented in Table 4. The mean rating of music-evoked nostalgia in the Mexican sample was 5.46 ($SD = 1.29$), which was similar to the U.S. sample ($M = 5.53$). An independent samples t test indicated no significant difference between the U.S. and Mexican samples, indicating that the intensity of nostalgia evoked by listening to nostalgic music did not differ significantly between the U.S. and Mexican participants.

The study found that Mexican participants donated an average of MXN\$75.36 ($SD = 36.69$), which constituted 75.36% of the endowment they received. In comparison, U.S. participants donated an average of 52.35% of their endowment. An independent samples t test revealed a significant difference in donation amounts between the two samples, $t(178) = -4.04$, $p < .001$, with a moderate effect size of $d = 0.59$ (Cohen, 1988). It should be noted that a direct comparison of the donation amounts is not appropriate due to the difference in endowment amounts between the two groups (US\$20 vs. MXN\$100). However, when considering findings from previous studies that employed the dictator game with diverse populations from various parts of the world, participants typically contributed 20%–43% of their endowment (e.g., Ben-Ner et al., 2008; Pradel et al., 2009; Raihani & Bshary, 2012). Therefore, it becomes plausible to suggest that Mexican participants displayed a relatively higher

Table 2
Zero-Order Correlation Among Person-Level and Context-Level Variables (U.S. Sample)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Person-level													
1. CFPB	—												
2. SNS	-.01	—											
3. BMIS	.10	-.00	—										
4. Extraversion	-.01	.18	.40***	—									
5. Agreeableness	.04	-.03	.44***	.15	—								
6. Conscientiousness	.22	.06	.38***	.26*	.32**	—							
7. Neuroticism	.00	-.04	-.46***	-.38***	-.35***	-.41***	—						
8. Openness	.14	.23*	.08	.17	-.02	.07	-.11	—					
9. TEQ	-.02	.29**	.36**	.32**	.58***	.24*	-.22*	.06	—				
10. MI	.03	.25*	.29**	.09	.29**	.34**	-.13	-.03	.44***	—			
Context-level													
11. PANAS: Positive	-.09	.06	.22*	-.03	.16	.06	-.14	-.08	.21	.19	—		
12. PANAS: Negative	-.09	-.03	-.23*	.01	.06	-.07	.12	.06	.11	-.01	-.07	—	
13. PINE	.02	.32**	.20	.04	.24*	.17	-.13	-.08	.34**	.20	.18	-.06	—

Note. PINE = Personal Inventory of Nostalgia Experience; CFPB = Consumer Financial Protection Bureau; SNS = Southampton Nostalgia Scale; BMIS = Brief Mood Introspection Scale; BFI = Big Five Inventory; TEQ = Toronto Empathy Questionnaire; MI = Moral identity; PANAS = Positive and Negative Affect Schedule.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
Hierarchical Multiple Regression Predicting the Donation Amount (U.S. Sample)

Predictor variable	Donation amount			
	Model 1		Model 2	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
(Intercept)	-21.61**	8.14	-26.43**	7.88
Empathy	0.50***	0.14	0.35*	0.14
Perceived financial well-being	0.24	0.13	0.23	0.13
Music-evoked nostalgia			2.34**	0.75
<i>R</i> ²	.165		.257	
<i>F</i>	7.92***		9.11***	
Adjusted <i>R</i> ²	.144		.229	

Note. *N* = 83.

* *p* < .05. ** *p* < .01. *** *p* < .001.

level of generosity, but that U.S. participants were not particularly ungenerous in their donation behavior.

Predictors of Donation Amount

Identical analyses used in Study 1 were employed here. Correlations among the person-level and context-level variables are presented in Table 5. We first ran a simple linear regression to understand the effect of music-evoked nostalgia alone on the donation amount. This model accounted for 8.7% of the variance in the donation amount, $F(1, 95) = 9.04, p = .003$.

A backward elimination regression was then performed to obtain a reduced set of mediating variables. Assumptions for multiple regression were tested and the data met assumptions for normality, linearity, homoscedasticity, and multicollinearity. Regression results showed that perceived financial well-being and agreeableness (one of the Big Five personality traits) significantly predicted participants' donation amounts, $F(2, 94) = 9.43, p < .001$, adjusted $R^2 = .149$.

Finally, we conducted a hierarchical multiple regression to determine if music-evoked nostalgia predicted donation amount after

Table 4
Descriptive Statistics for All Variables (Mexico Sample)

Variable	<i>M</i>	<i>SD</i>	Min	Max
Donation amount (in MXN)	75.36	36.69	0	100
Music-evoked nostalgia (PINE)	5.46	1.29	1.00	7.00
Perceived financial well-being (CFPB)	23.82	5.96	11	43
Nostalgia proneness (SNS)	4.48	1.23	1.29	7.00
Mood (BMIS)	33.53	6.06	17	44
Extraversion (BFI)	3.25	0.91	1.38	5.00
Agreeableness (BFI)	3.61	0.55	1.88	4.67
Conscientiousness (BFI)	3.40	0.62	1.56	4.78
Neuroticism (BFI)	3.06	0.77	1.63	4.88
Openness (BFI)	4.23	0.49	2.70	5.00
Empathy (TEQ)	50.91	4.43	41	61
MI	39.26	6.33	16	50
Positive Affect (PANAS)	34.06	7.36	15	48
Negative affect (PANAS)	14.88	4.95	10	36

Note. PINE = Personal Inventory of Nostalgia Experience; CFPB = Consumer Financial Protection Bureau; SNS = Southampton Nostalgia Scale; BMIS = Brief Mood Introspection Scale; BFI = Big Five Inventory; TEQ = Toronto Empathy Questionnaire; MI = Moral identity; PANAS = Positive and Negative Affect Schedule.

controlling for the effect of mediating factors. As perceived financial well-being and agreeableness had emerged as significant predictors of the donation amount, they were entered as covariates in the first model. Music-evoked nostalgia was then added to the final model. Results revealed that the addition of music-evoked nostalgia in Model 2 accounted for an additional 5.1% of the variance, and this model explained 20% of the variance in donation amount, $F(3, 93) = 8.99, p < .001$ (Table 6). Both perceived financial well-being and agreeableness remained significant predictors of donation amount. The findings suggest that music-evoked nostalgia is associated with donation amount, but individual differences in perceived financial well-being and agreeableness also affected participants' donation decisions.

While the significant role of music-evoked nostalgia is consistent with Study 1, results from the two samples demonstrated somewhat inconsistent findings in terms of the role of the person-level variables. Specifically, while perceived financial well-being consistently emerged as a significant predictor of the donation amount in both samples, empathy significantly predicted the donation amount in the U.S. sample but agreeableness—one of the Big Five personality traits—appeared to play a significant role in the Mexican sample.

Discussion

Music-Evoked Nostalgia

In this study, undergraduate students from the United States and Mexico listened to nostalgic music of their choosing and reported the intensity of nostalgia they experienced using a self-report questionnaire (PINE; Newman et al., 2020). Our findings showed that both the U.S. and Mexican participants reported relatively higher ratings of nostalgia, compared to previous studies that used the same measure (e.g., Newman et al., 2020; J. Wang & Xia, 2021). Because, unlike the previous studies that measured nostalgia in daily life contexts, the present study induced nostalgia via an experimental manipulation (i.e., listening to nostalgic music), it is not feasible to make a direct comparison. However, our finding still seems to support prior research that highlighted music as a potent means of evoking nostalgia, especially when the music is personally relevant and meaningful (Garrido & Davidson, 2019; Juslin et al., 2008; Michels-Ratliff & Ennis, 2016; Wildschut et al., 2006). Future research using randomized controlled designs could further explore the capacity of nostalgic music in evoking intense nostalgia more readily and quickly than other cues, for example, by comparing participants' nostalgia experience when evoked by music versus other triggers, such as scents and films, or evoked by nostalgic music that is personally relevant and meaningful versus music that has no personal relevance.

Music-Evoked Nostalgia and Charitable Giving

The primary aim of this study was to examine the relationship between music-evoked nostalgia and charitable giving among undergraduate students in the United States and Mexico. We paid particular attention to the amount of participant donation after listening to nostalgic music of their choice. Results from both samples consistently showed a significant positive relationship between music-evoked nostalgia and donation amount, even after controlling for the effect of various person-level and context-level factors.

While the mechanism underlying this relationship remains unclear, prior research examining the social and psychological functions of

Table 5
Zero-Order Correlation Among Person-Level and Context-Level Variables (Mexican Sample)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Person-level													
1. CFPB	—												
2. SNS	-.24*	—											
3. BMIS	.19	-.25*	—										
4. Extraversion	-.03	.03	.02*	—									
5. Agreeableness	.15	-.09	.12	.28**	—								
6. Conscientiousness	.39***	-.23*	.13	.14	.14	—							
7. Neuroticism	-.14	-.42***	-.39***	-.20*	-.43***	-.13	—						
8. Openness	-.01	.09	.03	.23*	.14	.07	.02	—					
9. TEQ	.15	.05	.02	.29**	.23*	.21	.03	.31**	—				
10. MI	-.04	-.05	.17	.45***	.36***	.13	-.11	.18	.31**	—			
Context-level													
11. PANAS: Positive	.14	-.03	.29**	.07	.19	.20	-.15	.23*	.17	.18	—		
12. PANAS: Negative	-.14	.26**	-.05***	.03	-.23*	-.14	.32**	.08	-.07	-.15	-.19	—	
13. PINE	.19	.31**	.04	.05	.02	-.02	.12	.03	.10	.06	-.08	.09	—

Note. PINE = Personal Inventory of Nostalgia Experience; CFPB = Consumer Financial Protection Bureau; SNS = Southampton Nostalgia Scale; BMIS = Brief Mood Introspection Scale; BFI = Big Five Inventory; TEQ = Toronto Empathy Questionnaire; MI = Moral identity; PANAS = Positive and Negative Affect Schedule.

* $p < .05$. ** $p < .01$. *** $p < .001$.

nostalgia provides a context for interpreting this relationship. When individuals listen to music from their past, it often elicits intense nostalgia, promoting them to reminisce about fond memories (Michels-Ratliff & Ennis, 2016). Music-evoked nostalgia has been found to foster psychological functions, such as renewed social connectedness and emotional bonds (Juhl et al., 2020), increased secure attachment (Sedikides et al., 2008), and a sense of meaning in life (Routledge et al., 2011), possibly because memories elicited by nostalgic music often feature the self-being surrounded by close others, such as friends, family members, and romantic partners (Wildschut et al., 2006). While music-evoked nostalgia may not always elicit positive memories, individuals tend to view past memories through “rose-tinted glasses” and recall them more favorably than they were in reality, known as rosy retrospection (Mitchell et al., 1997). Thus, music-evoked nostalgia is likely to evoke positive emotional responses that, in turn, promote altruistic motivations with the ultimate goal of benefiting others (Mikulincer et al., 2005; Stephan et al., 2014).

Alternatively, the relationship between music-evoked nostalgia and donation amount may be inferred from previous research showing that nostalgia reduces the desire for money. Lasaleta et al. (2014)

conducted a series of experiments utilizing various measures of desire for money and nostalgia, and found that the experience of nostalgia weakens people’s attachment to their money. This is because high levels of state nostalgia intensify feelings of social connectedness, which fulfills the need to belong and enhances social bonds (Hepper et al., 2014; Wildschut et al., 2010). This suggests that music-evoked nostalgia may reduce the importance of money in decision-making, leading individuals to prioritize prosocial behavior, such as charitable giving.

Other research has also suggested that nostalgia can positively influence individuals’ motivation to give to others. Sargeant et al. (2006) identified emotional and familiar utilities as key factors that influence charitable giving decisions, with emotional utility referring to the motivation to give to a charity derived from a desire for one’s own emotional benefit, and familiar utility referring to the motivation to give derived from a desire to benefit family members or significant others. A recent study on nostalgia and donation found that increased emotional and familiar utilities were associated with a greater intention to donate to charitable causes, even during challenging times such as the COVID-19 pandemic (Zhang & Tao, 2022). Although research on the relationship between music-evoked nostalgia and prosocial behavior is very limited, our study’s findings are in line with prior research on nostalgia and donation in other contexts.

Table 6
Hierarchical Multiple Regression Predicting the Donation Amount (Mexican Sample)

Predictor variable	Donation amount			
	Model 1		Model 2	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-27.80	25.29	-59.44*	27.32
Agreeableness	17.05**	6.37	17.23**	6.18
Perceived financial well-being	1.75**	0.59	1.46*	0.58
Music-evoked nostalgia			6.95*	2.64
R^2	.167		.225	
F	9.43***		8.909***	
Adjusted R^2	.149		.200	

Note. $N = 97$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The Role of Person-Level and Context-Level Factors in Charitable Giving

Although we initially anticipated that various person-level and context-level factors, as illustrated in Figure 1, would exert influence on participants’ decisions to donate to charity, our results showed otherwise. Most of the person-level factors, including nostalgia proneness, MI, personality traits (with the exception of agreeableness), which have previously been associated with donation decisions, did not demonstrate a significant impact on donation decisions in this study. Similarly, all context-level factors—participants’ general mood state, emotional responses to the nostalgic music, and the audio features of the music they listened to, did not

significantly affect their donation decisions. Nonetheless, our findings did reveal the role of individuals' perceptions of their own financial well-being in shaping their decision to donate, as commonly observed in both the U.S. and Mexican samples. Perceived financial well-being refers to an individual's sense of financial security and financial freedom of choice, regardless of their actual possessions (Consumer Financial Protection Bureau, 2015). Considering that the study was conducted during the early stages of the pandemic—a period particularly marked by heightened financial insecurity (Jones et al., 2021) and decreased psychological well-being (Chaturvedi et al., 2021) among many college students—it is understandable that participants' perceptions of their financial status significantly influenced their decision to share money with unknown others. This aligns with previous studies that have demonstrated the significant role of an individual's perception of financial situations in their decision to donate and the amount they donate (e.g., Mesch et al., 2006; L. Wang & Graddy, 2008). Yet, it is worth noting that participants in both samples donated a relatively substantial portion of their endowment amount, exceeding half of it (U.S. sample: 52%; Mexican sample: 75%), even during a challenging time period. While this finding may suggest the unique influence of music-evoked nostalgia on donation decisions, further investigations are warranted to explore this possibility, such as by comparing groups of participants who listen to nostalgic music with those who are exposed to current chart-topping hits.

In addition, results from the U.S. sample (Study 1) showed that empathy also played a significant role in participants' decision to donate, consistent with previous research on nostalgia and prosocial behaviors (Juhl et al., 2020; Zhou et al., 2012). In the current study, we utilized the TEQ to measure participants' empathy, which primarily assesses individual levels of empathic concern (Spreng et al., 2009). Empathic concern is an other-focused emotional response that involves experiencing the emotions of other people and is known to be a key motivator of helping behavior (Gülseven et al., 2020; Light et al., 2015). When individuals empathize with others, they can better understand the emotions and situations of the other person, which can increase their motivation to help, even if it comes at a personal cost. Thus, it is possible that music-evoked nostalgia can increase empathy, which may then increase the likelihood of donating more to a charitable cause.

Interestingly, we did not find the influence of empathy on donation in the Mexican sample. The lack of association between empathy and donation in the Mexican sample may reflect cultural differences in the role of empathy in prosocial behavior. Prior research has suggested that collectivistic cultures, which are more likely to be found in Mexico (Hofstede et al., 2010), prioritize interdependence and social harmony over individualism and independence (Hofstede, 1980). In such cultures, social norms and expectations may play a more prominent role in motivating donations than personal feelings of empathy (Miller et al., 1990). This view may also be in line with results from the Mexican sample (Study 2), which showed that agreeableness, one of the Big Five personality traits, significantly predicted the amount of participants' donations. This is consistent with previous research that demonstrated the agreeableness-prosociality association, whereby agreeable individuals are likely to display prosocial attitudes and behaviors (e.g., Bolt et al., 2011; Carlo et al., 2005; Graziano et al., 2007; Susanto et al., 2022). On both the individual and societal levels, agreeableness (characterized with warmth, trust, courtesy, and cooperativeness) is known to be related to collectivism (Taras

et al., 2010). Agreeable individuals tend to be more sensitive to others, avoid conflict, and are more accommodating (Roccas et al., 2002). Therefore, it is possible that agreeable individuals in the Mexican sample may have donated more due to their desire to maintain social harmony and meet social expectations. Additionally, it is also possible that agreeable individuals perceived helping others as an important aspect of their self-concept, as agreeableness is conceptually related to altruistic self-identity (Bekkers, 2006).

Although the mediating role of empathy and agreeableness is not surprising, the inconsistent links between these variables and donation amounts in the U.S. and Mexican samples warrant further explanation. One possible explanation could be attributed to the differences in the video clips used in the donation dictator game. The video presented to U.S. participants was a narrative that depicted a teenage girl and her family who had lost their home and were living in a shelter. This video may have evoked a stronger empathic reaction in empathic individuals, which in turn, heightened their motivation to donate. On the other hand, the video presented to Mexican participants was more informative and less emotionally charged, highlighting the organization's work and how its endeavors benefit children in need. Prior studies on charitable giving with Mexican populations have shown that trust in the recipients' ability to make good use of their contribution is a crucial factor in considering a donation (Layton & Mossel, 2015). Moreover, Laufer et al. (2010) found that Mexican college students tended to donate more when the message emphasized the donors' contribution to a group effort, rather than the recipient organization's role in the success. The video viewed by Mexican participants aligned with this criterion, as the recipient was a well-established organization with deep roots in the community, and that the donation was facilitated through the university, which participants could trust. Furthermore, the video focused on how their contribution would benefit children in need of better education, a message believed to be effective in collectivistic cultures (Laufer et al., 2010). This aspect of the video may have promoted Mexican participants' motivation to donate more. Finally, considering the large number of variables being examined, it is also possible that the sample size may not have been sufficiently large enough to detect the relationships. Future research is necessary to determine whether the observed differences in the role of empathy and agreeableness in donation behavior in the two samples may be attributed to the study design or other factors.

Limitations

While previous research has suggested a possible link between music-evoked nostalgia and donation behavior, to our knowledge, no empirical evidence has yet been established. The results of the present study provided evidence of a positive association between music-evoked nostalgia and listener donations both in the U.S. and Mexican samples, even after accounting for other person-level and context-level variables. Although the mechanism underlying this relationship remains unclear, the findings support the idea that feeling nostalgic may lead to increased altruistic motivations with the ultimate goal of benefiting others and that nostalgic music may serve as an effective tool to enhance these motivations, as found in previous nostalgia studies (e.g., Li, 2015; Zhou et al., 2012).

However, it is important to acknowledge potential limitations of this study and recommend avenues for future investigation. One limitation arises from the timing of data collection during the early stage of the

COVID-19 pandemic, when daily routines were drastically disrupted by the outbreak. As such, the pandemic's impact may have influenced the study's results, making it necessary to conduct future studies during more stable periods. Also, because the experiment took place in participants' own environments, rather than in a well-controlled laboratory setting, variations in participants' music-listening experiences were inevitable. While we had instructed participants in advance to prepare for a focused music-listening experiment and have their preferred listening device ready, the quality of listening equipment and listening environments could have had a tangible impact on participants' overall experiences with the music, including immersion, emotional impact, and other psychological factors. Furthermore, although various contextual factors were carefully considered, including the emotional parameters of music analyzed through the Spotify API, it is not possible to firmly conclude that nostalgia evoked by self-selected nostalgic music directly affected participants' donation decisions. Randomized controlled trials comparing listening to nostalgic music versus other types of music (e.g., personally irrelevant music, sad/happy music) as well as comparing nostalgia evoked by nostalgic music with that evoked by nonmusical nostalgic stimuli (e.g., scents, films) would provide more conclusive evidence regarding the role of music-evoked nostalgia in charitable giving. Finally, despite our effort to maintain a consistent experiment design between the U.S. and Mexican samples, unavoidable differences existed, including the use of different video clips and endowment amounts in the donation dictator game. These differences may have introduced limitations. Future research should consider controlling for potential effects of these elements, while also accounting for differences in price indices across countries when conducting cross-cultural experiments.

References

- Alzuabi, R., Brown, S., & Taylor, K. (2022). Charitable behaviour and political affiliation: Evidence for the UK. *Journal of Behavioral and Experimental Economics*, 100, Article 101917. <https://doi.org/10.1016/j.socec.2022.101917>
- Aquino, K., & Reed IIA. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology*, 83(6), 1423–1440. <https://doi.org/10.1037/0022-3514.83.6.1423>
- Argente, D. O., Hsieh, C. T., & Lee, M. (2020). *Measuring the cost of living in Mexico and the US (No. w27806)*. National Bureau of Economic Research.
- Barrett, F. S., Grimm, K. J., Robins, R. W., Wildschut, T., Sedikides, C., & Janata, P. (2010). Music-evoked nostalgia: Affect, memory, and personality. *Emotion*, 10(3), 390–403. <https://doi.org/10.1037/a0019006>
- Batcho, K. I. (2007). Nostalgia and the emotional tone and content of song lyrics. *The American Journal of Psychology*, 120(3), 361–381. <https://doi.org/10.2307/20445410>
- Bekkers, R., & Wiepking, P. (2011). A literature review of empirical studies of philanthropy: Eight mechanisms that drive charitable giving. *Nonprofit and Voluntary Sector Quarterly*, 40(5), 924–973. <https://doi.org/10.1177/0899764010380927>
- Bekkers, R. H. (2006). Traditional and health-related philanthropy: The role of resources and personality. *Social Psychology Quarterly*, 69(4), 349–366. <https://doi.org/10.1177/019027250606900404>
- Bekkers, R. H. (2007). Measuring altruistic behavior in surveys: The all-or-nothing dictator game. *Survey Research Methods*, 1(3), 139–144. <https://doi.org/10.18148/srm/2007.v1i3.54>
- Ben-Ner, A., Kramer, A., & Levy, O. (2008). Economic and hypothetical dictator game experiments: Incentive effects at the individual level. *The Journal of Socio-Economics*, 37(5), 1775–1784. <https://doi.org/10.1016/j.socec.2007.11.004>
- Bolt, S., Eisinga, R., Venbrux, E., Kuks, J. B., & Gerrits, P. O. (2011). Personality and motivation for body donation. *Annals of Anatomy—Anatomischer Anzeiger*, 193(2), 112–117. <https://doi.org/10.1016/j.aanat.2011.01.005>
- Carlo, G., Okun, M. A., Knight, G. P., & de Guzman, M. R. T. (2005). The interplay of traits and motives on volunteering: Agreeableness, extraversion and prosocial value motivation. *Personality and Individual Differences*, 38(6), 1293–1305. <https://doi.org/10.1016/j.paid.2004.08.012>
- Cartwright, E., & Thompson, A. (2023). Using dictator game experiments to learn about charitable giving. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 34(1), 185–191. <https://doi.org/10.1007/s11266-022-00490-7>
- Chaturvedi, K., Vishwakarma, D. K., & Singh, N. (2021). COVID-19 and its impact on education, social life and mental health of students: A survey. *Children and Youth Services Review*, 121, Article 105866. <https://doi.org/10.1016/j.childyouth.2020.105866>
- Cheung, W. Y., Wildschut, T., Sedikides, C., Hepper, E. G., Arndt, J., & Vingerhoets, A. J. (2013). Back to the future: Nostalgia increases optimism. *Personality and Social Psychology Bulletin*, 39(11), 1484–1496. <https://doi.org/10.1177/0146167213499187>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- Consumer Financial Protection Bureau. (2015). *Measuring financial well-being: A guide to using the CFPB financial well-being scale*.
- Davis, F. (1979). *Yearning for yesterday: A sociology of nostalgia*. Free Press.
- Dickert, S., Sagara, N., & Slovic, P. (2011). Affective motivations to help others: A two-stage model of donation decisions. *Journal of Behavioral Decision Making*, 24(4), 361–376. <https://doi.org/10.1002/bdm.697>
- Duman, D., Neto, P., Mavrolampados, A., Toiviainen, P., & Luck, G. (2022). Music we move to: Spotify audio features and reasons for listening. *PLoS ONE*, 17(9), Article e0275228. <https://doi.org/10.1371/journal.pone.0275228>
- Eckel, C. C., & Grossman, P. J. (1996). Altruism in anonymous dictator games. *Games and Economic Behavior*, 16(2), 181–191. <https://doi.org/10.1006/game.1996.0081>
- Einolf, C. J. (2017). Cross-national differences in charitable giving in the west and the world. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 28(2), 472–491. <https://doi.org/10.1007/s11266-016-9758-4>
- Forbes, K. F., & Zampelli, E. M. (2013). The impacts of religion, political ideology, and social capital on religious and secular giving: Evidence from the 2006 Social Capital Community Survey. *Applied Economics*, 45(17), 2481–2490. <https://doi.org/10.1080/00036846.2012.667555>
- Ford, J. B., & Merchant, A. (2010). Nostalgia drives donations: The power of charitable appeals based on emotions and intentions. *Journal of Advertising Research*, 50(4), 450–459. <https://doi.org/10.2501/S0021849910091592>
- Garrido, S., & Davidson, J. W. (2019). *Music, nostalgia and memory*. Springer.
- Gibbs, H., & Egermann, H. (2021). Music-evoked nostalgia and wellbeing during the United Kingdom COVID-19 pandemic: Content, subjective effects, and function. *Frontiers in Psychology*, 12, Article 647891. <https://doi.org/10.3389/fpsyg.2021.647891>
- Graziano, W. G., Habashi, M. M., Sheese, B. E., & Tobin, R. M. (2007). Agreeableness, empathy, and helping: A person × situation perspective. *Journal of Personality and Social Psychology*, 93(4), 583–599. <https://doi.org/10.1037/0022-3514.93.4.583>
- Grönlund, H., & Pessi, A. B. (2015). The influence of religion on philanthropy across nations. In P. Wiepking & F. Handy (Eds.), *The Palgrave handbook of global philanthropy* (pp. 558–569). Palgrave Macmillan. https://doi.org/10.1057/9781137341532_32
- Gülseven, Z., Kumru, A., Carlo, G., & de Guzman, M. R. (2020). The roles of perspective taking, empathic concern, and prosocial moral reasoning in the self-reported prosocial behaviors of Filipino and Turkish young adults. *Journal of Cross-Cultural Psychology*, 51(10), 814–830. <https://doi.org/10.1177/0022022120968265>

- Heggli, O. A., Stupacher, J., & Vuust, P. (2021). Diurnal fluctuations in musical preference. *Royal Society Open Science*, 8(11), Article 210885. <https://doi.org/10.1098/rsos.210885>
- Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion*, 12(1), 102–119. <https://doi.org/10.1037/a0025167>
- Hepper, E. G., Wildschut, T., Sedikides, C., Ritchie, T. D., Yung, Y. F., Hansen, N., Abakoumkin, G., Arikian, G., Cisek, S. Z., Demassosso, D. B., Gebauer, J. E., Gerber, J. P., González, R., Kusumi, T., Misra, G., Rusu, M., Ryan, O., Stephan, E., Vingerhoets, A. J. J., & Zhou, X. (2014). Pancultural nostalgia: Prototypical conceptions across cultures. *Emotion*, 14(4), 733–747. <https://doi.org/10.1037/a0036790>
- Hill, E. M. (2016). Posthumous organ donation attitudes, intentions to donate, and organ donor status: Examining the role of the big five personality dimensions and altruism. *Personality and Individual Differences*, 88, 182–186. <https://doi.org/10.1016/j.paid.2015.09.021>
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Sage.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind: Intercultural cooperation and its importance for survival*. McGraw-Hill.
- Janata, P., Tomic, S. T., & Rakowski, S. K. (2007). Characterisation of music-evoked autobiographical memories. *Memory*, 15(8), 845–860. <https://doi.org/10.1080/09658210701734593>
- John, O. P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102–138). Guilford Press.
- Jones, H. E., Manze, M., Ngo, V., Lamberson, P., & Freudenberg, N. (2021). The impact of the COVID-19 pandemic on college students' health and financial stability in New York city: Findings from a population-based sample of City University of New York (CUNY) students. *Journal of Urban Health*, 98(2), 187–196. <https://doi.org/10.1007/s11524-020-00506-x>
- Juhl, J., Wildschut, T., Sedikides, C., Diebel, T., Cheung, W. Y., & Vingerhoets, A. J. (2020). Nostalgia proneness and empathy: Generality, underlying mechanism, and implications for prosocial behavior. *Journal of Personality*, 88(3), 485–500. <https://doi.org/10.1111/jopy.12505>
- Juslin, P. N., Liljeström, S., Västfjäll, D., Barradas, G., & Silva, A. (2008). An experience sampling study of emotional reactions to music: Listener, music, and situation. *Emotion*, 8(5), 668–683. <https://doi.org/10.1037/a0013505>
- Juslin, P. N., & Västfjäll, D. (2008). Emotional responses to music: The need to consider underlying mechanisms. *Behavioral and Brain Sciences*, 31(5), 559–575. <https://doi.org/10.1017/S0140525X08005293>
- Kashif, M., Sarifuddin, S., & Hassan, A. (2015). Charity donation: Intentions and behaviour. *Marketing Intelligence & Planning*, 33(1), 90–102. <https://doi.org/10.1108/MIP-07-2013-0110>
- Kusumi, T., Matsuda, K. E. N., & Sugimori, E. (2010). The effects of aging on nostalgia in consumers' advertisement processing. *Japanese Psychological Research*, 52(3), 150–162. <https://doi.org/10.1111/j.1468-5884.2010.00431.x>
- Lasaleta, J. D., Sedikides, C., & Vohs, K. D. (2014). Nostalgia weakens the desire for money. *Journal of Consumer Research*, 41(3), 713–729. <https://doi.org/10.1086/677227>
- Laufer, D., Silvera, D. H., McBride, J. B., & Schertzer, S. M. (2010). Communicating charity successes across cultures: Highlighting individual or collective achievement? *European Journal of Marketing*, 44(9/10), 1322–1333. <https://doi.org/10.1108/03090561011062862>
- Lay, J. C., & Hoppmann, C. A. (2015). Altruism and prosocial behavior. In N. Pachana (Ed.), *Encyclopedia of geropsychology* (Vol. 5, pp. 1–9). Springer.
- Layton, M. D., & Mossel, V. (2015). Giving in Mexico: Generosity, distrust and informality. In P. Wiepking & F. Handy (Eds.), *The Palgrave handbook of global philanthropy* (pp. 64–87). Palgrave Macmillan.
- LeBlanc, V. R., McConnell, M. M., & Monteiro, S. D. (2015). Predictable chaos: A review of the effects of emotions on attention, memory and decision making. *Advances in Health Sciences Education*, 20(1), 265–282. <https://doi.org/10.1007/s10459-014-9516-6>
- Lehrer, K., & Porter, C. (2018). Charitable dictators? Determinants of giving to NGOs in Uganda. *Journal of International Development*, 30(1), 80–101. <https://doi.org/10.1002/jid.3331>
- Li, Y. (2015). Nostalgia promoting pro-social behavior and its psychological mechanism. *Open Journal of Social Sciences*, 3(10), 177–186. <https://doi.org/10.4236/jss.2015.310024>
- Light, S. N., Moran, Z. D., Swander, L., Le, V., Cage, B., Burghy, C., Westbrook, C., Greishar, L., & Davidson, R. J. (2015). Electromyographically assessed empathic concern and empathic happiness predict increased prosocial behavior in adults. *Biological Psychology*, 104, 116–129. <https://doi.org/10.1016/j.biopsycho.2014.11.015>
- Liu, L., Suh, A., & Wagner, C. (2018). Empathy or perceived credibility? An empirical study on individual donation behavior in charitable crowdfunding. *Internet Research*, 28(3), 623–651. <https://doi.org/10.1108/IntR-06-2017-0240>
- Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology*, 55(1), 102–111. <https://doi.org/10.1037/0022-3514.55.1.102>
- Mesch, D. J., Rooney, P. M., Steinberg, K. S., & Denton, B. (2006). The effects of race, gender, and marital status on giving and volunteering Indiana. *Nonprofit and Voluntary Sector Quarterly*, 35(4), 565–587. <https://doi.org/10.1177/0899764006288288>
- Michels-Ratliff, E., & Ennis, M. (2016). This is your song: Using participants' music selections to evoke nostalgia and autobiographical memories efficiently. *Psychomusicology: Music, Mind, and Brain*, 26(4), 379–384. <https://doi.org/10.1037/pmu0000167>
- Mikulincer, M., Shaver, P. R., Gillath, O., & Nitzberg, R. A. (2005). Attachment, caregiving, and altruism: Boosting attachment security increases compassion and helping. *Journal of Personality and Social Psychology*, 89(5), 817–839. <https://doi.org/10.1037/0022-3514.89.5.817>
- Miller, J. G., & Bersoff, D. M. (1998). The role of liking in perceptions of the moral responsibility to help: A cultural perspective. *Journal of Experimental Social Psychology*, 34(5), 443–469. <https://doi.org/10.1006/jesp.1998.1359>
- Miller, J. G., Bersoff, D. M., & Harwood, R. L. (1990). Perceptions of social responsibilities in India and the United States: Moral imperatives or personal decisions? *Journal of Personality and Social Psychology*, 58(1), 33–47. <https://doi.org/10.1037/0022-3514.58.1.33>
- Mitchell, T. R., Thompson, L., Peterson, E., & Cronk, R. (1997). Temporal adjustments in the evaluation of events: The “rosy view”. *Journal of Experimental Social Psychology*, 33(4), 421–448. <https://doi.org/10.1006/jesp.1997.1333>
- Neter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. (1996). *Applied linear statistical models* (4th ed.). WCB McGraw-Hill.
- Newman, D. B., Sachs, M. E., Stone, A. A., & Schwarz, N. (2020). Nostalgia and well-being in daily life: An ecological validity perspective. *Journal of Personality and Social Psychology*, 118(2), 325–347. <https://doi.org/10.1037/pspp0000236>
- Panda, R., Redinho, H., Gonçalves, C., Malheiro, R., & Paiva, R. P. (2021, July). How does the Spotify API compare to the music emotion recognition state-of-the-art? In *18th sound and music computing conference (SMC 2021)* (pp. 238–245). Axa sas/SMC Network.
- Pascal, V. J., Sprott, D. E., & Muehling, D. D. (2002). The influence of evoked nostalgia on consumers' responses to advertising: An exploratory study. *Journal of Current Issues & Research in Advertising*, 24(1), 39–47. <https://doi.org/10.1080/10641734.2002.10505126>
- Pinazo, D., Barrós-Loscertales, A., Peris, R., Ventura-Campos, N., & Ávila, C. (2016). Neuroticism predisposes to donation more than agreeableness: An fMRI study. *Journal of Neuroscience, Psychology, and Economics*, 9(2), 100–108. <https://doi.org/10.1037/npe0000054>
- Pradel, J., Euler, H. A., & Fetchenhauer, D. (2009). Spotting altruistic dictator game players and mingling with them: The elective assortment of

- classmates. *Evolution and Human Behavior*, 30(2), 103–113. <https://doi.org/10.1016/j.evolhumbehav.2008.09.003>
- Raihani, N. J., & Bshary, R. (2012). A positive effect of flowers rather than eye images in a large-scale, cross-cultural dictator game. *Proceedings of the Royal Society B: Biological Sciences*, 279(1742), 3556–3564. <https://doi.org/10.1098/rspb.2012.0758>
- Rana, S., Raut, S. K., Prashar, S., & Hamid, A. B. A. (2021). Promoting through consumer nostalgia: A conceptual framework and future research agenda. *Journal of Promotion Management*, 27(2), 211–249. <https://doi.org/10.1080/10496491.2020.1829773>
- Reid, C. A., Green, J. D., Wildschut, T., & Sedikides, C. (2015). Scent-evoked nostalgia. *Memory*, 23(2), 157–166. <https://doi.org/10.1080/09658211.2013.876048>
- Reisenwitz, T. H., Iyer, R., & Cutler, B. (2004). Nostalgia advertising and the influence of Nostalgia proneness. *Marketing Management Journal*, 14(2), 55–66.
- Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). The Big Five personality factors and personal values. *Personality and Social Psychology Bulletin*, 28(6), 789–801. <https://doi.org/10.1177/0146167202289008>
- Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C. M., Juhl, J., Vingerhoets, A. J. J. M., & Schlotz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology*, 101(3), 638–652. <https://doi.org/10.1037/a0024292>
- Sargeant, A., Ford, J. B., & West, D. C. (2006). Perceptual determinants of nonprofit giving behavior. *Journal of Business Research*, 59(2), 155–165. <https://doi.org/10.1016/j.jbusres.2005.04.006>
- Schervish, P. G., & Havens, J. J. (2002). The new physics of philanthropy: The supply-side vectors of charitable giving—Part 2: The spiritual side of the supply side. *International Journal of Educational Advancement*, 2(3), 221–241.
- Schindler, R. M., & Holbrook, M. B. (2003). Nostalgia for early experience as a determinant of consumer preferences. *Psychology & Marketing*, 20(4), 275–302. <https://doi.org/10.1002/mar.10074>
- Sedikides, C., Leunissen, J., & Wildschut, T. (2021). The psychological benefits of music-evoked nostalgia. *Psychology of Music*, 50(6), 2044–2062. <https://doi.org/10.1177/03057356211064641>
- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. (2008). Nostalgia: Past, present, and future. *Current Directions in Psychological Science*, 17(5), 304–307. <https://doi.org/10.1111/j.1467-8721.2008.00595.x>
- Sellick, M. C. (2004). Discovery, connection, nostalgia: Key travel motives within the senior market. *Journal of Travel & Tourism Marketing*, 17(1), 55–71. https://doi.org/10.1300/J073v17n01_04
- Sherga, Jr., R. M., Wei, D., Benson, N., & Javed, F. (2021). Alternative methods for deriving emotion metrics in the Spotify® recommendation algorithm. *SMU Data Science Review*, 5(3), Article 3.
- Siemens, J. C., Raymond, M. A., Choi, Y., & Choi, J. (2020). The influence of message appeal, social norms and donation social context on charitable giving: Investigating the role of cultural tightness-looseness. *Journal of Marketing Theory and Practice*, 28(2), 187–195. <https://doi.org/10.1080/10696679.2020.1717968>
- Spreng, R. N., McKinnon, M. C., Mar, R. A., & Levine, B. (2009). The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *Journal of Personality Assessment*, 91(1), 62–71. <https://doi.org/10.1080/00223890802484381>
- Stephan, E., Wildschut, T., Sedikides, C., Zhou, X., He, W., Routledge, C., Cheung, W.-Y., & Vingerhoets, A. J. (2014). The mnemonic mover: Nostalgia regulates avoidance and approach motivation. *Emotion*, 14(3), 545–561. <https://doi.org/10.1037/a0035673>
- Susanto, A., Musadieg, M., Hidayat, K., & Iqbal, M. (2022). Subjective norms as a mediation of the opportunity to donate factors and agreeableness personality that can affect the intention to donate. *Management Science Letters*, 12(2), 75–80. <https://doi.org/10.5267/j.msl.2021.11.001>
- Taras, V., Kirkman, B. L., & Steel, P. (2010). Examining the impact of culture's consequences: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology*, 95(3), 405–439. <https://doi.org/10.1037/a0018938>
- UC Riverside Institutional Research. (2020). *Enrollment: Demographic*. <https://ir.ucr.edu/stats/enrollment/demographic>
- Verhaert, G. A., & Van den Poel, D. (2011). Empathy as added value in predicting donation behavior. *Journal of Business Research*, 64(12), 1288–1295. <https://doi.org/10.1016/j.jbusres.2010.12.024>
- Vidas, D., Larwood, J. L., Nelson, N. L., & Dingle, G. A. (2021). Music listening as a strategy for managing COVID-19 stress in first-year university students. *Frontiers in Psychology*, 12, Article 647065. <https://doi.org/10.3389/fpsyg.2021.647065>
- Wang, J., & Xia, L. (2021). Revenge travel: Nostalgia and desire for leisure travel post COVID-19. *Journal of Travel & Tourism Marketing*, 38(9), 935–955. <https://doi.org/10.1080/10548408.2021.2006858>
- Wang, L., & Graddy, E. (2008). Social capital, volunteering, and charitable giving. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 19(1), 23–42. <https://doi.org/10.1007/s11266-008-9055-y>
- Wang, Y., Tang, Y. Y., & Wang, J. (2015). Cultural differences in donation decision-making. *PLoS ONE*, 10(9), Article e0138219. <https://doi.org/10.1371/journal.pone.0138219>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology*, 91(5), 975–993. <https://doi.org/10.1037/0022-3514.91.5.975>
- Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordero, F. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology*, 98(4), 573–586. <https://doi.org/10.1037/a0017597>
- Wilhelm, M. O., & Bekkers, R. (2010). Helping behavior, dispositional empathic concern, and the principle of care. *Social Psychology Quarterly*, 73(1), 11–32. <https://doi.org/10.1177/0190272510361435>
- Winterich, K. P., Mittal, V., & Ross, Jr., W. T. (2009). Donation behavior toward in-groups and out-groups: The role of gender and moral identity. *Journal of Consumer Research*, 36(2), 199–214. <https://doi.org/10.1086/596720>
- Zhang, Y., & Tao, W. (2022). The impact of nostalgia proneness on online donation willingness: The mediating effect of consumer-brand relationship. *Frontiers in Psychology*, 13, Article 927330. <https://doi.org/10.3389/fpsyg.2022.927330>
- Zhou, X., Sedikides, C., Wildschut, T., & Gao, D.-G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science*, 19(10), 1023–1029. <https://doi.org/10.1111/j.1467-9280.2008.02194.x>
- Zhou, X., Wildschut, T., Sedikides, C., Chen, X., & Vingerhoets, A. J. (2012). Heartwarming memories: Nostalgia maintains physiological comfort. *Emotion*, 12(4), 678–684. <https://doi.org/10.1037/a0027236>

Received April 26, 2023

Revision received October 18, 2023

Accepted October 20, 2023 ■

Copyright of Psychomusicology: Music, Mind & Brain is the property of American Psychological Association and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.